

**PRE-APPEAL BRIEF REQUEST FOR REVIEW**

Docket Number (Optional)

P71474US0

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on \_\_\_\_\_

Signature\_\_\_\_\_

Typed or printed name \_\_\_\_\_

Application Number

10/594,068

Filed

December 26, 2006

First Named Inventor

Hwa Yaw TAM

Art Unit

2613

Examiner

Tanya T. NGO

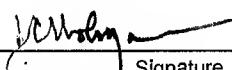
Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).

Note: No more than five (5) pages may be provided.

I am the

 applicant/inventor.  
Signature assignee of record of the entire interest.  
See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed.  
(Form PTO/SB/96)

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Registration number if acting under 37 CFR 1.34 \_\_\_\_\_.

December 29, 2011

Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required.  
Submit multiple forms if more than one signature is required, see below\*.



\*Total of \_\_\_\_\_ forms are submitted.

This collection of information is required by 35 U.S.C. 132. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.6. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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**PATENT**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of:

Confirmation Number: 8875

Hwa Yaw TAM et al.

Attorney Docket: P71474US0

Serial No. 10/594,068

Group Art Unit: 2613

Filed: December 26, 2006

Examiner: Tanya T. NGO

For: RAILWAY MONITORING SYSTEM

**PRE-APPEAL BRIEF REQUEST FOR REVIEW**

Mail Stop AF  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450  
Sir/Madam:

In response to the Final Official Action mailed June 30, 2011, Applicant respectfully requests a panel review of the final rejection so that the rejection can be withdrawn and the application be allowed. First, the rejection is improperly made final even though a request for continued examination was filed in response to the Advisory Action. Second, there is a clear deficiency in the *prima facie* case in support of a rejection because prior art including the references Tubel (US 2003/0094281 A1) and Varasi et al. (US 5,493,390) do not teach or suggest the present invention under 35 U.S.C. § 103 in light of the previous submitted Declarations under 37 CFR §1.132.

**REJECTIONS UNDER 35 U.S.C. § 103:**

Claims 1 and 4 – 17 have been rejected under 35 U.S.C. §103 as allegedly being unpatentable over Tubel (US Pat. Appl. Pub. No. 2003/0094281 A1) in view of Varasi (US 5,493,390).

Applicant traverses the rejection and respectfully submits that the embodiments of present-claimed invention are not obvious over cited references. More specifically, the Examiner admits the claimed invention differs from Tubel in that the first part of the fiber includes a first Bragg grating created therein for generating the first reflected optical signal, wherein a characteristic of the first Bragg grating is variable in correspondence to the variance of said characteristic of said one track, and wherein the first reflected optical signal contains information relating to the variance of the characteristic of the first Bragg grating.

The Examiner further cited MPEP 2121.04 Section II, to reject the Applicant's arguments that there is not any teaching, suggestion or motivation for those skilled in the art to combine the cited references in order to arrive at the presently claimed invention because Tubel teaches away from using fiber Bragg grating for monitoring conditions of the railway.

Applicant respectfully disagrees with the Examiner's rejections and submits that the claimed invention is not obvious over the cited references. The Examiner has not given full consideration of the Applicant's submission including the Declarations under 37 CFR §1.132.

Applicant respectfully submits that, reliability is critically related to human safety in railway industry, and hence reliability is considered to be of utmost importance. Tubel had stated that the use of discrete sensors such as FBG sensor is less reliable than the use of sensors based on Raman and/or Rayleigh and/or Brillouin techniques. To be specific, Tubel was unable to solve the problem of detecting whether the FBG sensor has been dislocated from the rail location as a dislocated sensor as described by Tubel would continue to talk to the interrogator, and the central computer looking after the signalling aspects would assume there is no train in the zone being surveyed. This erroneous signal, which fails on the wrong side, would be the recipe for a major catastrophe (such as the train accident in Wenzhou, China in July, 2011) because a dislocated sensor renders a passer by train becoming invisible to the signalling system. Trains from behind the invisible train would be allowed to run at full speed and runs into the danger of colliding with the invisible train in front.

Hence the failure to ensure the FBG sensor being installed is not dislocated in a system designed according to the teaching of Tubel and Varasi combined would be considered to be unsafe and no railway engineer will be brave enough to install such system which is potentially disastrous or accident prone. In view of such intrinsic limitation of the combined system by Tubel and Varasi, the railway engineers will be positively discouraged from using FBG sensors as railway engineers are most concerned about safety and hence reliability. If a more reliable alternative (i.e. by using a distributed system using Rayleigh, Brillouin, and Raman scattering techniques) is being pointed out (by Tubel), the railway engineer will definitely not bother to look at the less reliable system which uses discrete sensors such as those using FBG sensors.

Therefore, there is no reason or motivation for those skilled in the art to employ FBG sensors in Tubel's system. The Examiner, however, fails to fully consider this point and fails to give any comments on this point.

It should be noted that Tubel admits that "reliability can be improved if no sensors 32 are deployed in the rail 302, using reflect photons from the light travelling into fiber optical cable 20 instead". It thus could be derived that the deployment of sensors 32 will be more disadvantageous over the deployment of sensors based on Raman and/or Rayleight and/or Brillouin techniques.

In other words, the deployment of sensors 32 will bring disadvantages, i.e. worse liability, over the other embodiments as specified in Tubel's invention. Please note, this appears to reflect the downside of the Tubel. The technical problem existing in Tubel's invention, however, is addressed by the claimed invention.

The claimed invention improves the liability by employing the sensors 32, which are considered as bringing worse liability to the monitoring system in Tubel. In this regard, the claimed invention has technical advantages over the Tubel, offers significant economic, reliability and maintenance advantages, and thus is nonobvious over Tubel.

### **Motivation to Combine Cited References**

The Examiner alleges that those skilled in the art have the motivation to combine Tubel with Varasi so as to arrive at the claimed invention. Applicant respectfully

disagrees. In general, having motivation to combine requires the technical solution 1 in Reference 1 has certain technical problems and Reference 2 provides another solution 2 which addresses the technical problems in Reference 1. In this scenario, those skilled in the art will be inspired to look to reference 2 and combine solution 1 and 2 so as to arrive at a new technical combination.

However, it is not the case for the currently claimed invention, Tubel's invention and Varasi's invention.

The object of Tubel's invention is to address the inadequacy of discrete sensors such as fiber Bragg gratings for railroad condition measurements. To be specific, Tubel explicitly proposes using following scattering techniques whereby stress and strain on rails may be detected, namely "Rayleigh, Brillouin, and Raman scattering techniques" (see paragraph [0115]) to measure the railroad conditions.

The Varasi's invention, however, fails to address the problem existing in Tubel's invention. The Varasi's invention aims to provide diagnostics and measurement of static and/or dynamic strains and temperature of structures by adopting fiber Bragg gratings; however, it does not address the low reliability caused by the deployment of fiber Bragg gratings in Tubel. In fact, it would be difficult for those skilled in the art to ascertain whether the Bragg gratings have been dislocated unless the pre-strain technique proposed in the present invention is used, and such pre-strain technique are neither taught nor suggested by the cited references. Indeed, the teaching of Dariotis (US Patent No: 6377727 B1) is for temperature compensation only; it does not teach one to detect whether the sensor has been dislocated from location at which the strain is to be measured.

As such, the combination of Tubel and Varasi is different from the claimed invention. Thus, the claimed invention cannot be arrived at even combining of Tubel and Varasi inventions.

Furthermore, Varasi has only indicated that its invention may be applicable to ground transportation, however, Varasi appears to have failed to specify how to apply its invention to ground transportation.

It is noted that the Varasi was granted in 1996 and that although the existence of Bragg gratings may be known by railway engineers, non-progression of technology using Bragg grating in railway monitoring systems is demonstrative that railway engineers do not see Bragg grating to be of much value or applicability to the industry, especially Tubel has stated the low reliability of Bragg grating.

In view of the above, it is respectfully submitted that the claimed invention is not obvious to those skilled in the art in view of the combination of Tubel and Varasi as well as the common generally knowledge, and thus is patentable.

According to MPEP 2143.01, the mere fact that references can be combined or modified does not render the resultant combination obvious unless the results would have been predictable to one of ordinary skill in the art. *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385, 1396 (2007). The system and processes in the cited references are quite different from that of the present invention. It is respectfully submitted that a *prima facie* case of obviousness has not been established.

Therefore, the pending claims are not obvious over cited references and the rejection under 35 U.S.C. § 103 has been overcome. Accordingly, withdrawal of the rejections under 35 U.S.C. § 103 is respectfully requested.

Having overcome all outstanding grounds of rejection, the application is now in condition for allowance, and prompt action toward that end is respectfully solicited.

Respectfully submitted,

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